

FAQs on Global E-Waste Dumping

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General FAQs on E-Waste Exports to Developing Countries

Is American e-waste really exported to developing countries?

Recycling industry leaders estimate that 50% -80% of all electronic waste collected in the US for recycling is not really recycled at all, but is exported via container ship to developing countries,

particularly in Asia and Africa. Since the U.S. government does not even keep track of the volume of e-waste exported, this figure is an educated estimate and the best that currently exists. Primary destinations in Asia are: China, India, Pakistan, Philippines, and Vietnam. Primary destinations in Africa are Ghana and Nigeria.

What happens to e-waste exported to these countries?

Exports to Asia

In Asia, typically, the old computers, printers, monitors etc. end up in thousands of “backyard” recycling operations where some of the poorest laborers in the country disassemble and process them using crude, unsafe methods – like breaking open CRT monitors with hammers, “cooking” circuit boards to remove chips, sweeping printer toner dust from cartridges and using dangerous acid baths to extract gold. Workers rarely have any protective equipment, like gloves or masks. And they are unaware of the risks of contamination to which they are exposed. The operations have completely contaminated whole villages with some of the highest levels of pollutants ever recorded. Studies of China’s Guiyu region – where a large volume of e-waste is processed - found that **more than 80% of the children have lead poisoning, the water is unsafe to drink, and the workers have extraordinarily high levels of toxic fire retardants in their bodies.**¹

Exports to Africa

In Africa container loads of computer scrap arrive from the US in such port cities as Lagos, Nigeria loaded with an average of 75% unusable junk, and 25% resalable used electronic equipment for sale in the marketplace. The junk ends up being burned in dumps, sending plumes of very dangerous pollutants into the local environment.

Is sounds primitive, but isn’t it still recycling?

No. They are removing and selling the metals, but at a great cost to human health. The rest of the material – the plastics and glass, does not usually have resale value in these markets; it is treated as trash. Here’s what happens:

Burning plastics. The plastic casings from TVs and computers which contain heavy metals and brominated flame retardants are often burned, not in controlled incinerators, but in open piles, with no emission controls. **Burning these plastics gives off deadly dioxin and furans**, heavy metals and polycyclic aromatic hydrocarbons, a mixture of some of the most harmful pollutants on earth, which the workers and nearby residents are breathing in on a regular basis. Piles of computer wires are also burned in open fires to recover the copper found inside.

Dumping the leaded glass. While there are places where leaded glass from CRTs can be properly smelted, that’s not what happens to e-waste sent to the “informal sector” in

¹ X.Z. Yu^a, Y. Gao^a, S.C. Wu, H.B. Zhang, K.C. Cheung and M.H. Wong. “Distribution of polycyclic aromatic hydrocarbons in soils at Guiyu area of China, affected by recycling of electronic waste using primitive technologies.” *Chemosphere*, [Volume 65, Issue 9](#), November 2006, Pages 1500-1509

developing countries. For examples, in Nigeria, CRT tubes are cracked to remove the copper yoke, releasing toxic phosphor dust, and the rest is simply dumped.

Cooking circuit boards. Circuit boards are heated in shallow pans or over open flames to melt the lead solder to allow the removal of chips, exposing the workers to lead fumes. There are no emissions controls to limit exposure.

Acid Stripping. Chips are then often put in acid baths to remove the small amounts of gold. This process is very dangerous to unprotected workers, and releases toxic gases. Finally, following the process the acid-hydrocarbon residues are simply dumped into nearby streams and rivers.

Why is this e-waste exported instead of being recycled in the U.S.?

Most e-waste costs more money to properly recycle than the value that can be recovered from the materials; unscrupulous recyclers and brokers can make far more money exporting the waste to countries where those costs can be externalized or dumped into the environment. Sometimes these “recyclers” will charge consumers an “environmental fee” of \$5 to \$15 dollars to dispose of a TV. Consumers pay under the impression that the fee will ensure the item will be properly recycled. Little do they know that instead, the recycler pockets the fee, loads up a sea-going container, and then gets some extra money from a Chinese or African broker who will receive the waste where it is then sent to the horrific, backyard e-waste operations.

The “recycler” gets paid both at the front end *and* the back end and only has to load up a container and pay the shipping cost. Even if recyclers do not ask for an “environmental fee” they can often make money as long as they export the waste because nobody in the importing country is required to dispose of it or recycle it correctly at its true cost. The business of dumping costs on others can be very profitable.

If recycling costs money then why am I able to drop off my TV for free at my local collection event?

It costs money to safely recycle most e-waste, so if a recycler is taking your waste for free it is either being exported or somebody is subsidizing the cost. If you live in CA, Maine, Minnesota, Washington, Oregon, Rhode Island, or Texas (computers only, not TVs) state laws provide funding for e-waste recycling (paid by the manufacturer, or in the case of California, by consumers upon purchase of new equipment. Sometimes another corporate sponsor will pay for recycling. But if there is no clear sponsor paying for the recycling costs, then your old monitor, or TV, probably got exported to a developing country.

Can we recycle all our toxic electronics here in the US?

We have many responsible electronics recyclers here in the U.S. who can disassemble and recycle used products. Currently they are operating under-capacity and their business is getting hurt badly by the competition from the exporters. Some of the materials used in electronics are most efficiently recycled in large smelters located in other developed countries in Europe or Canada. But there is no excuse for exporting such hazardous wastes to developing countries. All U.S. hazardous electronic waste can be managed in developed countries.

Circuit boards: Many of the toxics in electronics are mixed into the metals on the circuit boards. To best reclaim those metals, they must be sent to an appropriate metal

smelter. There are no circuit board smelters in the U.S. Sometimes circuit boards are sent to a refinery in the US for pre-processing, but not final smelting. The world's best large-scale circuit board smelters are found in Canada, Germany, Japan, Belgium and Sweden.

Leaded glass: The leaded glass from cathode ray tubes (CRTs) used in TVs and computer monitors poses a significant recycling challenge. The glass has low value but the volumes are increasing because we are phasing out of CRTs in favor of flat screen TVs and monitors. Currently in the U.S. leaded glass from cathode ray tubes (lead-glass cullet) can be processed by different types of lead and glass smelters. There is only one lead smelter in the U.S. (in Missouri) but it does not always have the capacity to accept leaded glass. Consequently, smelters in Canada or Mexico are often used. In South Korea and Poland there are also factories that turn old CRT glass into new CRTs, which are still marketed outside the U.S.

Mercury lamps, switches, etc. Mercury needs to be handled by special mercury processors. There are several such mercury processors in the US. It is illegal to ship this processed (elemental) mercury overseas because of federal legislation passed in 2008.

Batteries. There are battery processors (smelters) in the US also.

FAQs on Congressional Bill To Stop global e-waste dumping

How would the federal export bill stop global e-waste dumping?

The federal export bill adds a new chapter to the federal RCRA laws, which bans the export of "restricted electronic equipment" from the US to developing nations. Restricted electronic equipment means electronic equipment whole or in fragments that includes, contains, or consists of toxic material including

- Cathode ray tubes (CRTs) and CRT glass in any form; mercury or PCBs at any level; lead, beryllium, antimony, hexavalent chromium, cadmium, selenium, arsenic or thallium in concentrations greater than the concentration limits established by the EPA Administrator, and batteries.

There are three exceptions to this export ban:

- Processed lead glass cullet that is "furnace ready" and being sent to a glass-to-glass recycling plant in a country which will legally accept it
- Used electronics which are tested in the US and fully functional
- Warranty returns going back to the manufacturer.

This bill would make it a criminal violation to export hazardous electronic waste to developing countries.

Is this a trade restriction?

It is the same legal trade restriction to which 170 countries, including numerous members of the WTO, have already agreed. It applies only to hazardous waste. It does not affect clean commodities such as copper scrap, aluminum scrap etc. This law allows clean electronics and their parts, and materials to be traded to any country. The bill is structured in a way to make it

clear to recyclers what hazards would need to be removed from e-waste in order to export it to any country. The bill doesn't completely ban the export of toxic e-waste, but it does require that if it is to be exported it only should get sent to "developed" countries, which are in a better position to process it responsibly and where the reason for export is not simply externalization of costs and liabilities and the exploitation of poorer communities.

Will this create objections under WTO? (World Trade Organization)

The proposed legislation is written to be completely consistent with the Basel Ban Amendment/Basel Convention, which was developed by a large number of countries and WTO member nations as Parties. This bill can actually serve to better harmonize U.S. practice with the rest of the world. It is therefore unlikely that a country would file a WTO objection to this new policy and even less likely that they would succeed in overturning what has been decided by 170 countries already.

Also, WTO specifically says that nothing in the Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures necessary to protect human, animal or plant life or health.

What is the effect of this bill on US companies?

This bill will help corporate America adhere to goals of responsible global citizenship, and reward the "good actors" – both recyclers, and manufacturers, who are playing by the rules, and trying to do the right thing. Almost all companies use electronics. Eventually these electronics reach the end of their useful life. Most corporations have realized that they don't want their old computers and other electronics to be exported to poor countries, so they ask their recyclers/asset manager to take steps to make sure that isn't happening. But that's much easier said than done. It takes a lot of time, effort, and money for companies to make sure their recyclers and then their vendors and brokers are not in fact exporters. The federal government can make that easier by passing a law to stop these problematic exports. This bill will do just that.

Will passing the export bill mean that recycling will become more expensive?

Some products (like computers, laptops, cellphones) have enough commodity value that they won't cost more to recycle. But responsible recycling of some toxic products (like CRT televisions and monitors) does cost money on the front end. It costs more to manage risk and harm carefully. Responsible recyclers currently charge fees to cover these costs – in many states the manufacturers pay this cost under statewide recycling laws. **However, money spent upstream to prevent harm is far more cost effective than trying to cure disease, clean-up pollution and mitigate damage downstream after the damage is done.**

Will the export bill create jobs in the U.S.?

Yes. Currently, there are a lot of U.S. electronics recyclers that are operating under capacity because they cannot compete with the exporters. They are losing business to those in the global dumping game. By allowing the whole units of electronics to be exported to developing countries, the U.S. is also outsourcing jobs. If these non-working whole units can't be exported, then the disassembly must happen here in the U.S., bringing those jobs back home.

FAQs on how our exported e-waste comes back to haunt us

Does e-waste export pose a national security problem?

One little-known horror of electronic waste exportation to China is that it provides the primary feedstock globally for the microprocessor counterfeiting market. This is a new form of counterfeiting with significant national security implications for the US. Workers in China pluck the chips off of circuit boards, and refinish them (and sometimes repaint them) with markings claiming that the chips are new when they can be more than 10 years old. They pass them off as special military grade products when they are just consumer-grade, coming from the old computers we exported to China. They are then sold into the supply chain, and are very difficult to detect as being fraudulent. They are purchased by the Pentagon, so they can then end up in NASA spacecraft, commercial aircraft computer systems, military hardware such as fighter jet computers, missile navigation systems, etc. A Naval Air Systems Command manager told Business Week that the problem is so prevalent, "we are having field failures regularly within our weapon systems—and in almost every weapon system."

See Business Week's frightening investigative article and video, "Dangerous Fakes. How counterfeit, defective computer components from China are getting into U.S. warplanes and ships."²

Does exported e-waste have anything to do with the lead in children's products from China?

Yes, scientists and journalists have documented a "Circle of Poison" where lead from e-waste exported to China returns to us in children's jewelry. Lead has historically been used for solder on circuit boards in electronics. Circuit boards removed from electronic products sent to China for disassembly are heated in woks or over open flames in primitive backyard recycling operations. The melted solder is removed, dumped into a bucket and later sold to local metals companies. The Wall Street Journal documented these metals being sold to Chinese makers of children's jewelry, which is imported to the US and sold at dollar stores.³

FAQs on the Laws in Other Countries Regarding E-Waste Exports

Do other countries also export their e-waste to developing countries?

Most industrialized, developed countries (including all of Europe) have strictly prohibited the export of hazardous electronic waste to developing countries. Most have done this by implementing and ratifying an international agreement known as the Basel Ban Amendment to the Basel Convention – a United Nations treaty adopted in Basel, Switzerland, in 1989.

What is the Basel Convention?

The Basel Convention is a global treaty ratified by almost every country of the world (170 countries or "Parties") but not by the United States. This Convention seeks to minimize and

² Business Week, October 2, 2009, "Dangerous Fakes. How counterfeit, defective computer components from China are getting into U.S. warplanes and ships."

http://www.businessweek.com/magazine/content/08_41/b4103034193886.htm

³"Lead Toxins Take A Global Round Trip," Wall Street Journal, July 12, 2007.

http://www.computertakeback.com/news_and_resources/lead_toxins_global.cfm

strictly control the trade in hazardous waste between countries, with a particular goal to protect developing countries. The U.S. is the only developed country NOT to have ratified the Basel Convention. Exporting countries covered by Basel are required to get written permission from importing and transit countries before shipping their hazardous wastes, through a very specific “prior informed consent” process. Also, parties to the Convention are prohibited from trading in hazardous waste with countries which are not parties to the Convention.

What is the Basel Ban Amendment?

Unfortunately, the 1989 Basel Convention did not completely prohibit developed countries from sending their toxics to the developing countries despite the original desire of so many countries that it would. The desire for such a prohibition by a vast majority of countries led to the passage of the Basel Ban Amendment in 1995, which bars rich countries from exporting their hazardous wastes to poor countries. Technically, it prohibits exports of hazardous waste from countries which are members of the European Union, or the Organization for Economic Cooperation and Development (OECD)⁴, and Liechtenstein (in total 39 countries) to all other countries. The Basel Ban has been ratified already by 64 countries but is not yet an amendment to the Basel Convention. Nevertheless it enjoys widespread support from the majority of the 39 countries to which it applies, and has already been incorporated as part of domestic law in 32 of them. But, the US is not a Party to the Basel Convention; it lags far behind the rest of the world in controlling hazardous waste exports to developing countries.

If we ratified the Basel Convention, would that stop e-waste export?

NOT UNLESS the U.S. simultaneously ratified the subsequent Ban Amendment. If the U.S. only ratified the original Basel Convention and not the subsequent Ban Amendment, it could very well make matters worse by making much of this toxic trade legal which currently is illegal. Why is this so? Because Basel Parties that are developing countries cannot currently trade with a non-Party like the U.S.

What is the impact of the Basel Ban Amendment in terms of U.S. law?

To date, the U.S. Senate has given its advice and consent to ratify the Basel Convention, but Congress has not passed the legislation that would be needed to actually implement Basel. However there has been no consent to a ratification of the Basel Ban Amendment. If the U.S. proceeded to ratify both then all hazardous wastes, and not just e-waste would be prohibited from export.

Is it currently illegal to export e-waste from the US to these countries?

The U.S. does not consider export to be illegal, but the importing countries do consider it illegal. These exports commonly violate the laws of the importing countries, because it is illegal for most Basel Parties to import hazardous wastes from the United States. But the U.S. does not ban the export of most electronic waste. In fact, rule changes by the EPA have made e-waste exports easier in the last two decades. The only restriction is on exporting CRTs (cathode ray tubes). Exporters of CRTs for “recycling” are supposed to get the EPA to request consent from the importing countries. As the Government Accountability Office (GAO) pointed out in its 2008 report [*“EPA Needs to Better Control Harmful U.S. Exports through Stronger Enforcement and More Comprehensive Regulation”*](#), U.S. waste export laws include only a very small fraction (some cathode ray tubes) of e-wastes under any kinds of export controls. According to the GAO,

⁴ For more information: www.oecd.org

even those rules are poorly enforced. Significantly, the rules are almost completely ignored by much of the recycling industry. Thus, the flood of e-waste exports often takes place in knowing violation of the laws of importing countries such as Nigeria, China, or Vietnam, while the U.S. looks the other way.

How is it possible that the U.S. allows our exporters to violate the laws of other countries?

Our federal RCRA laws (which govern waste management) originally said that we shouldn't export hazardous waste to any country that doesn't agree to take it. But then over the years, the EPA created many exemptions (circuit board exemption, scrap metal exemption, precious metal exemption, etc.) to the definitions of hazardous waste, removing most electronic scrap from the definition of hazardous waste, as long as it was going to be recycled (no matter how badly or in what countries). It is striking that, in contrast to the rest of the world, the U.S. has made definitions that effectively claim something is no longer hazardous simply because it is to be recycled. In turn the material can be exported. The U.S. no longer seeks the countries' permission to send these toxic wastes to other countries, even though the EPA is fully aware that these exports are often in violation of the importing countries' laws.

What if we just made sure somebody set up good, technologically advanced facilities in developing countries, then we could export there, right?

This concept of "good" facilities in developing countries sounds reasonable, but expecting that to solve the global dumping problem is really a myth. Even if you were to build the most advanced facility in a developing country, this is no assurance that it would be operated in a manner that was safe and responsible. Developing nations are considered developing nations because they have weaker economies and a lack of resources. They are very likely to lack the safety net of strong environmental and worker safety regulations, or enforcement and infrastructure and governance systems, that are needed to make sure that a facility dealing with highly dangerous chemicals will function in a safe manner and will be able to manage its hazardous residuals downstream with care. For example: it is highly unlikely that a developing country will have effective and well enforced occupational safety and health laws or training, clinics, proper landfills for hazardous residues, proper enforcement and monitoring, tort law, right to know laws, etc. The necessary protections needed to prevent exploitation and cost externalization go far beyond the facility. In reality it is impossible to de-link cheap labor from lack of protections. We have seen this problem clearly illustrated with the lack of enforcement of food safety laws in China, whose laws don't allow the addition of toxic melamine to food products, but whose lack of strong enforcements (or any whistle blower protections) led to four infant deaths and tens of thousands of infants being sickened from consuming contaminated formula.

Resources:

GAO Report, August 2008. "ELECTRONIC WASTE: EPA Needs to Better Control Harmful U.S. Exports through Stronger Enforcement and More Comprehensive Regulation."

<http://www.gao.gov/new.items/d081044.pdf>

National Geographic Magazine, January 2008. “High Tech Trash: Will your discarded TV end up in a ditch in Ghana?” <http://ngm.nationalgeographic.com/2008/01/high-tech-trash/carroll-text>

Business Week, Oct 2, 2008. “Dangerous Fakes: How counterfeit, defective computer components from China are getting into U.S. warplanes and ships.” Link below also leads to video. [LINK](#).

Business Week, October 15, 2008. “E-Waste: The Dirty Secret of Recycling Electronics. Lax rules and weak enforcement allow scrap companies to profit by sending junked computers, printers, and TVs overseas.” [LINK](#).

CBS 60 Minutes, November 9, 2008. “The Electronic Wasteland.” 60 Minutes Follows America's Toxic Electronic Waste As It Is Illegally Shipped To Become China's Dirty Secret. <http://www.cbsnews.com/stories/2008/11/06/60minutes/main4579229.shtml>

The Wall Street Journal, July 12, 2007, “Lead Toxins Take a Global Round Trip. 'E-Waste' From Computers Discarded in West Turns Up In China's Exported Trinkets.”

Basel Action Network, Silicon Valley Toxics Coalition, February 2002, “Exporting Harm: The High Tech Trashing of Asia,” report and film. <http://www.ban.org/E-waste/technotrashfinalcomp.pdf>

Basel Action Network, October 2005, “The Digital Dump: Exporting Re-use and Abuse to Africa,” report and film. <http://www.ban.org/BANreports/10-24-05/documents/TheDigitalDump.pdf>

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For More Information:
www.electronicstakeback.com